# Influence of E-Procurement on Supply Chain Management Performance in Kisii County

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## Abstract

The study sought to investigate the influence of e-procurement on supply chain management performance in Kisii County. The research adopted descriptive research design. The target population in this study was 40 County Government employees. The study employed the use of primary sources of data where the researcher used questionnaires. Quantitative data was analyzed through the use of frequency distribution, mean scores and standard deviations. Chi-Square test was used to determine whether there is significant association between the study variables. From the chi-square test, the study concluded that there is a positive and significant association between dependent variable (supply chain management performance) and the independent variable (e-procurement). This means that e-tendering, e-invoicing and e-payment have a positive and significant influence on supply chain management performance. The study recommended that institution should provide the supplier with access credentials for the supplier portal. This will increase users' access to information in the e-procurement (electronic procurement) service with effective internet and thus an increase in chances of selecting the best supplier company for e-tendering. The system should enhance government financial controls and improve accounting, recording and reporting through proper systems of invoicing with regard to both the supplier and the institution. Automated procurement process should be specific with requisition, tendering, contract warding and payment. The goal of the e-procurement in the institution should be to enhance the quality of public service delivery in the county and to provide timely, transparent and accurate financial and accounting information across both national and county government.

**Keywords:** *E-Procurement, Supply Chain Management Performance, E-tendering, E-invoicing, E-payment*

## 1.0 Introduction

E-Procurement refers to the use of internet-based system used to carry out individual or all stages of procurement process, including search, sourcing, negotiation, ordering, receipt, and post purchase review (Croom & Brandon, 2004). Koorn et al. (2001) describes three types of e-Procurement systems which are buyer e-Procurement systems; seller e-Procurement systems; and online intermediaries. There are various forms of e-Procurement that concentrate on one or many stages of the procurement process, such as e-tendering, e-marketplace, e-auction/reverse auction, and e-catalogue. The e-Procurement application can

be viewed more broadly as an end-to-end solution that integrates and streamlines many procurement processes throughout the organization.

As noted by Nelson et al. (2001), purchasing accounts for the majority of organizational spending. As such, the advent of web-based electronic procurement has been heralded as a 'revolution' because of its potential to reduce the total cost of acquisition (Rai et al., 2006). It is also expected to impact on the nature of supplier governance, either reinforcing market-based relationships (Malone et al. 1989) or encouraging virtual hierarchies (Brosseau, 1990). Finally, the e-procurement revolution is expected to enhance the status and influence of the purchasing function within organizations (Osmonbekov et al., 2002).

In today's dynamic global competitive business environment, technology-based service is no longer an afterthought; rather it is a must for public and private organizations. It has become necessary for companies to provide their customers with cost-effective total solution and better customer satisfaction with innovative ideas and methods. With the emergence of Information and Communication Technology (ICT), companies have been forced to shift their operation from the traditional style to e-Business, e-Procurement and e-Supply Chain philosophy in order to sustain themselves (Lee et al., 2007).

Over the past decade, both private and public sector organizations have been utilizing Information Technology (IT) to streamline and automate their purchasing and other processes (Koorn et al., 2001). Continuous replenishment supply model has been integrated in Kisii County for supply chain management. The idea of the continuous replenishment supply chain model is to constantly replenish the inventory by working closely with suppliers and/or intermediaries. However, if the replenishment process involves many integrated partners to enhance its effectiveness. Therefore very tight integration is needed between the order-fulfillment process and the production process. Real-time information about demand changes is required in order for the production process to maintain the desired replenishment schedules and levels.

This model is most applicable to environments with stable demand patterns, as is usually the case with distribution of prescription medicine. The model requires intermediaries when large systems are involved. The actual supply chain in Kisii County supply chain model is focused on tracking customer demand in production process and finished goods inventory efficiently. This integration is often achieved through use of an information system that is fully integrated (an enterprise system). Through application of such a system, the organization can receive the access to timely information that can be used to develop and modify production plans and schedules. This information is also integrated further down the supply chain to the procurement function, so that the modified production plans and schedules can be supported by input materials.

## 1.1 Research Problem

The procurement function in Kenya has been characterized by massive scandals and indignity which have been attributed to poor handling of procurement information thus leading to excessive corruption (Thuo, 2009). There is need to have a robust automated procurement system which is interlinked and this will lead to enhanced competitiveness and lowered costs (Ouko et al., 2009). The county government is faced with a challenge when it comes to the issue of tendering. The significant number of complaints that the county government is blamed for in the procurement process varies. Currently, the performance of the county in delivering services to the stakeholders has reduced. The lack of transparency in the procurement process has made it impossible for the county to conduct proper procedure in

giving out contracts to the suppliers. The capacity of the county government to achieve the best supply deals in terms of supplies provided by the suppliers is not giving the exact results and the process continues to deprive other suppliers a better chance to access the procurement services and contracts due to lack of viable information about the procurement process. The lack of an E-procurement system in the county level has made it impossible for the county to achieve the best deal of the supply contract and thus little is done in terms of giving the right information. Payments are delayed when it comes to service delivery and thus the county is slow in delivering as a result of timelessness in supply. Furthermore, the county has not been able to effectively pay the suppliers due to late invoicing and delayed approvals for supply of goods and services to the county government. It is due to these backgrounds that this study has been undertaken to assess the effects of e procurement on supply chain management performance in Kisii County.

## 1.2 Study Objectives

i. To establish the effect of e-tendering on supply chain management in Kisii County.

ii. To determine the effect e-invoicing on supply chain management in Kisii County.

iii. To investigate the effect of e-payment on supply chain management in Kisii County.

## 2.0 Theoretical Framework

## 2.1 The Institutional Theory

The institutional theory is the traditional approach that is used to examine elements of public procurement (Blair, 2010). Kamau (2004) identifies three pillars of institutions as regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism, with expedience as basis for compliance. According to Scott (2004), institutions are composed of cultural-cognitive and regulative elements that, together with associated activities and resources give meaning to life. The author explains the three pillars of institutions as regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism, with expedience as basis for compliance. The normative pillar refers to norms (how things should be done) and values (the preferred or desirable), social obligation being the basis of compliance. The cultural cognitive pillar rests on shared understanding (common beliefs, symbols, shared understanding).

In Kenya, public procurement is guided by the PPDA Act 2005, regulations and guidelines which are from time to time issued by the Public procurement Oversight Authority only and which must complied with to the latter by all the private entities and providers. The principal agent theory as advocated by Donahue (1989) explains that procurement managers in private sector play a relationship role. But his findings are based on the buyer/supplier relationship and the need of the buyer, as the principal, to minimize the risks posed by the agent. The author argued that procurement managers including all civil servants concerned with public procurement must play the agent role.

Therefore procurement managers take on the role of agent for elected representatives. The principal-agency theory holds that sabotage is likely to occur when there is some disagreement between policy makers and the bureaucracy. The democratic perspective focuses on responsiveness to citizens and their representatives (Strom 2000). In relation to the study the drive for legitimacy ensures that the actions of an organization are desirable, proper, or appropriate within the environmentally and socially constructed system of norms, values,

beliefs, and definitions. In other words, organizations benefit from perceptions of credibility, persistence, and meaningfulness, thereby increasing the possibility of survival.

## 2.2 Socio-Economic Theory

Lyons (1986) propounded the socio-economic theory by integrating economic theory with theories from psychology and sociology to account for moral obligation and social influence as determinants of individuals' decisions on compliance. Lisa (2010) also adds that psychological perspectives provide a basis for the success or failure of organizational compliance. According to Lyons (1986), the legitimacy theory postulates that the organization is responsible to disclose its practices to the stakeholders, especially to the private and justify its existence within the boundaries of society. This theory, which focuses on the relationship and interaction between an organization and the society, provides a sufficient and superior lens for understanding government procurement system (Hui et al., 2011). In relation to the study, the theory provides a paradigm shift in supply chain management towards sustainable sourcing initiatives has resulted in the consequent change of the business behavior in regard to purchasing strategies and relationships with suppliers.

## 2.3 Empirical Review

According to Eadie et al. (2007), an organization which uses E-procurement has the following advantages: First, Price reduction in tendering: Empirical studies carried out Gebauer et al. (1988) in the United States of America indicated that the two most important measures for the success of procurement processes are cost and time. In this method, there is no paperwork, postage fee and other costs associated with preparation and sending tender documents. It is also faster to send a document electronically as compared to the traditional method of sending tender documents through post office. It results to improved order tracking and tracing, for it is much easier to trace the orders and make necessary corrections in case an error is observed in the previous order.

E-invoicing offers many benefits: significant cost reduction, process simplification, reduced payment time, greater security of data, as well as numerous environmental benefits. This is confirmed by enterprises and public authorities which already use it. Benston and Smith (1976) introduce transaction costs. They attempt to explain why individual corporations do not perform asset transformation themselves as a function of the transaction costs incurred in conducting such activities. As shown in transaction cost economics, the cost of the infrastructure is reduced per transaction when the volume of transactions increases. To create a financially viable e-invoicing solution, corporate needs to create this critical mass by a value network of alliance partners and technology solution providers to add the necessary desirability for electronic invoicing through the Financial Supply Chain.

E-payment is the fastest growth area in the global economy and almost carries potentials beyond measure. It provides consumers with the benefits of anytime, anywhere transactions, with lower costs. Moreover it, shortens the distance between the buyer and the seller and shrinks the world into a small village (Porter, 2001; Alberta E-Future Center, 2007). The uptake of e-payment is influenced by its potential to create business value and by awareness of its participants of the potential benefits (Salnoske, 1997). A major reason for most companies, irrespective of size, to participate in business is to extract some benefit from it. E-payment is no different (Kuzic, Fisher & Scollary, 2002).

## 3.0 Research Methodology

The research adopted descriptive research design. The target population in this study was 40 County Government employees. The study employed the use of primary sources of data where the researcher used questionnaires. Quantitative data was analyzed through the use of frequency distribution, mean scores and standard deviations. Chi-Square test was used to determine whether there is significant association between the study variables.

## 4.0 Results and Discussion

### 4.1 Descriptive Statistics

#### 4.1.1 E-Tendering

The study sought to establish the influence of e-tendering on supply chain management performance in Kisii County. This section presents findings to statements posed regarding e-tendering. The responses were given on a five-point likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = neutral; 2 = Disagree; 1= Strongly Disagree). The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement strongly agreed upon equivalent to a mean score of 3.5 to 5.0. Table 1presents the findings.

According to the results, majority of respondents were agreeing that tenders were being advertised online (mean =4.43, std deviation= 0.603) In addition majority of respondents were agreeing that all county staff make requisitions online (mean=4.35, std deviation= 0.588), also majority of the respondents strongly agreed that there is improved flow of information (mean= 4.32, std deviation= 0.784). Also majority of the respondents were agreeing that short listing of tenders is done by e-tendering system (mean= 4.08, std deviation= 0.759). Overall, majority of the respondents were found to agree with most of the statements regarding e-tendering (mean= 4.30); however the answers were varied as shown by a standard deviation of 0.68.

**Table 1: E-Tendering**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Tenders are advertised online | 4.43 | 0.603 |
| All county staff make requisitions online | 4.35 | 0.588 |
| There is improved flow of information | 4.32 | 0.784 |
| Short listing of tenders is done by e-tendering system | 4.08 | 0.759 |
| **Average** | **4.30** | **0.68** |

#### 4.1.2 E-Invoicing

The study sought to establish the influence of e-invoicing on supply chain management performance in Kisii County. This section presents findings to statements posed regarding e-invoicing. The responses were given on a five-point likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = neutral; 2 = Disagree; 1= Strongly Disagree). The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly

agree' have been taken to represent a statement strongly agreed upon equivalent to a mean score of 3.5 to 5.0. Table 2 presents the findings.

According to the results, majority of respondents were agreeing that services are automated (mean =4.41, std deviation= 0.686) In addition majority of respondents were agreeing that e-invoicing gives the ability to manage client information and billing from one application (mean=4.27, std deviation= 0.732), also majority of the respondents strongly agreed that e-invoicing has enhanced instant deliveries (mean= 4.41, std deviation= 0.686). Also majority of the respondents were agreeing that e-procurement has enhanced inventory management practices in the county offices (mean= 3.95, std deviation= 1.129). Overall, majority of the respondents were found to agree with most of the statements regarding e-tendering (mean= 4.26); however the answers were varied as shown by a standard deviation of 0.808.

**Table 2: E-Invoicing**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Services are automated | 4.41 | 0.686 |
| E-invoicing gives  the ability to manage client information and billing from one application | 4.27 | 0.732 |
| E-invoicing has enhanced instant deliveries | 4.41 | 0.686 |
| E-procurement has enhanced inventory management practices in the county offices | 3.95 | 1.129 |
| **Average** | **4.26** | **0.808** |

### 4.1.3 E-Payment

The study sought to establish the influence of e-payment on supply chain management performance in Kisii County. This section presents findings to statements posed regarding e-payment. The responses were given on a five-point likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = neutral; 2 = Disagree; 1= Strongly Disagree). The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement strongly agreed upon equivalent to a mean score of 3.5 to 5.0. Table 3 presents the findings.

According to the results, majority of respondents were agreeing that money transfer between virtual accounts usually takes a few minutes (mean =4.22, std deviation= 0.821) In addition majority of respondents were agreeing that e-payment has reduced risk of loss and theft (mean=4.95, std deviation= 0.329), also majority of the respondents strongly agreed that all money transfers can be performed at anytime, anywhere (mean= 3.95, std deviation= 0.88). Also majority of the respondents were agreeing that e-procurement has enhanced transparency hence reduction in corruption related costs (mean= 4.19, std deviation= 0.811). Overall, majority of the respondents were found to agree with most of the statements regarding e-payment (mean= 4.33); however the answers were varied as shown by a standard deviation of 0.710.

**Table 3: E-Payment**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Money transfer between virtual accounts usually takes a few minutes | 4.22 | 0.821 |
| E-payment has reduced risk of loss and theft | 4.95 | 0.329 |
| All money transfers can be performed at anytime, anywhere | 3.95 | 0.88 |
| E-procurement has enhanced transparency hence reduction in corruption related costs | 4.19 | 0.811 |
| **Average** | **4.33** | **0.710** |

**4.2 Chi-Square Test**

On determining if the variables on E-procurement (independent variable) have a significant relationship with supply chain management (dependent variable) the study went ahead to compute a chi-square test indicating how the variables interacted in the study. The results indicated that there is a significant association between the dependent variable supply chain management performance and the independent variable e-procurement (x= 68.868, p= 0.026). This implies that e-payment, e-invoicing and e-tendering influence performance as presented in table 4.

**Table 4: Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 68.868 | 38 | 0.026 |
| Likelihood Ratio | 64.748 | 38 | 0.054 |
| Linear-by-Linear Association | 2.226 | 1 | 0.136 |
| N of Valid Cases | 37 | | |

a 63 cells (100.0%) have expected count less than 5. The minimum expected count is .05.

Table 4 indicates that there is a strong association between the dependent and independent variables (p= 0.026)

**Table 5: Symmetric Measures**

| | | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | 1.364 | 0.026 |
| | Cramer's V | 0.557 | 0.026 |
| N of Valid Cases | | 37 | |

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

**5.0 Conclusion**

From the chi-square test, the study concluded that there is a positive and significant association between dependent variable (supply chain management performance) and the independent variable (e-procurement). This means that e-tendering, e-invoicing and e-payment have a positive and significant influence on supply chain management performance.

**6.0 Recommendations**

Based on the findings, the study recommended the following;

The institution should provide the supplier with access credentials for the supplier portal. This will increase users' access to information in the e-procurement (electronic procurement)

service with effective internet and thus an increase in chances of selecting the best supplier company for e-tendering.

The system should enhance government financial controls and improve accounting, recording and reporting through proper systems of invoicing with regard to both the supplier and the institution.

Automated procurement process should be specific with requisition, tendering, contract warding and payment. The goal of the e-procurement in the institution should be to enhance the quality of public service delivery in the county and to provide timely, transparent and accurate financial and accounting information across both national and county government.

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